PATENT CLAIMS

1. MOCVD process for the initial growth of nitrogenous semiconductor crystal materials in the form $A_xB_YC_ZN_VM_W$ wherein A, B, C is an element of group II or III, N is nitrogen, M represents an element of group V or VI, and X, Y, Z, W denote the molar fraction of each element of this compound, which are deposited on sapphire, SiC or Si, characterised in that the deposition of these semiconductor materials is performed in a continuous growth process from the first moment of wafer covering up to the achievement of a high-quality stratum on the surface.

2. Process according to Claim 2,
characterised by a continuous variation of the substrate temperature for the purpose of continuously re-structuring during said continuous growth of the aforementioned materials and the gas flow by ramp functions during the initial growth so as to achieve a quicker reproducible nucleation.

3. Process according to Claim 1 or 2,
characterised by controlling the defect density in said semiconductor stratum by continuous variation of the growth regime (cubic or hexagonal) during the initial growth by means of ramp functions and the continuous variation of the growth rate by way of variation of the gas phase concentration, of the total pressure or by continuous variation of other important growth factors.

4. Process according to any of the Claims 1 to 3,
characterised by controlling the stress density in the semiconductor crystal by a continuous variation of the growth regime during the initial growth by means of ramp functions (e. g. hexagonal and cubic phase).

5. Process according to any of the Claims 1 to 4,
characterised in that said continuous variation of the temperature can be described by the function T(t):

$$T(t) = t_0 + a_1 t + a_2 t^2 + a_3 t^3 + \ldots + a_n t^n.$$

6. Process according to any of the Claims 1 to 5,
characterised by a continuous variation of process parameters or process conditions influencing said hexagonal or cubic growth.

7. Process according to any of the Claims 1 to 6,
characterised by other methods of controlling the dislocation density in the crystal so that the transition from cubic growth to hexagonal growth takes place continuously.

8. Process according to any of the Claims 1 to 7,
characterised by the expedient production of opto-electronic and electronic devices and other elements such as LEDs or lasers displaying an enhanced homogeneity of the properties, intensity, electrical characteristics and emission wavelengths, as the properties of said nucleation layer according to the Claims 1 to 5 are insensitive to temperature variations and variations in the gas phase composition.